WebSphere Application Server z/OS Optimized Local Adapter

History of Functional Updates

See next page for continuation of timeline

8.0.0.1

- ***Development/Test***
  - Test code on distributed development machine and have WOLA call "proxied" to z/OS where WAS z/OS server and backend data systems are located
  - Support for inbound calls for EJB that resides in another WAS server from that connected to with WOLA registration
- ***Work Distribution***
  - Ability to round-robin between multiple external address spaces registered into server with the same register name
- ***Monitoring***
  - New SMF 120.10 record for outbound WOLA calls
  - Correlator tokens for WAS to CICS TS 4.2 requests
- ***APIs*** -- support for 64-bit calls from C/C++ and Assembler

8.0.0.0

- ***Install*** -- integrated, `olaInstall.sh` no longer needed
- ***Usage*** - IMS multi-segment/large message (>32K) support
- ***Availability*** -- Failover to alternate connection factory JNDI and failback
- ***Monitoring*** -- better visibility to WOLA *inbound* workload in SMF 120.9

7.0.0.12

- ***Usage*** -- Two-phase commit support WAS ⇨ CICS 4.1
- ***Usage*** -- IMS support

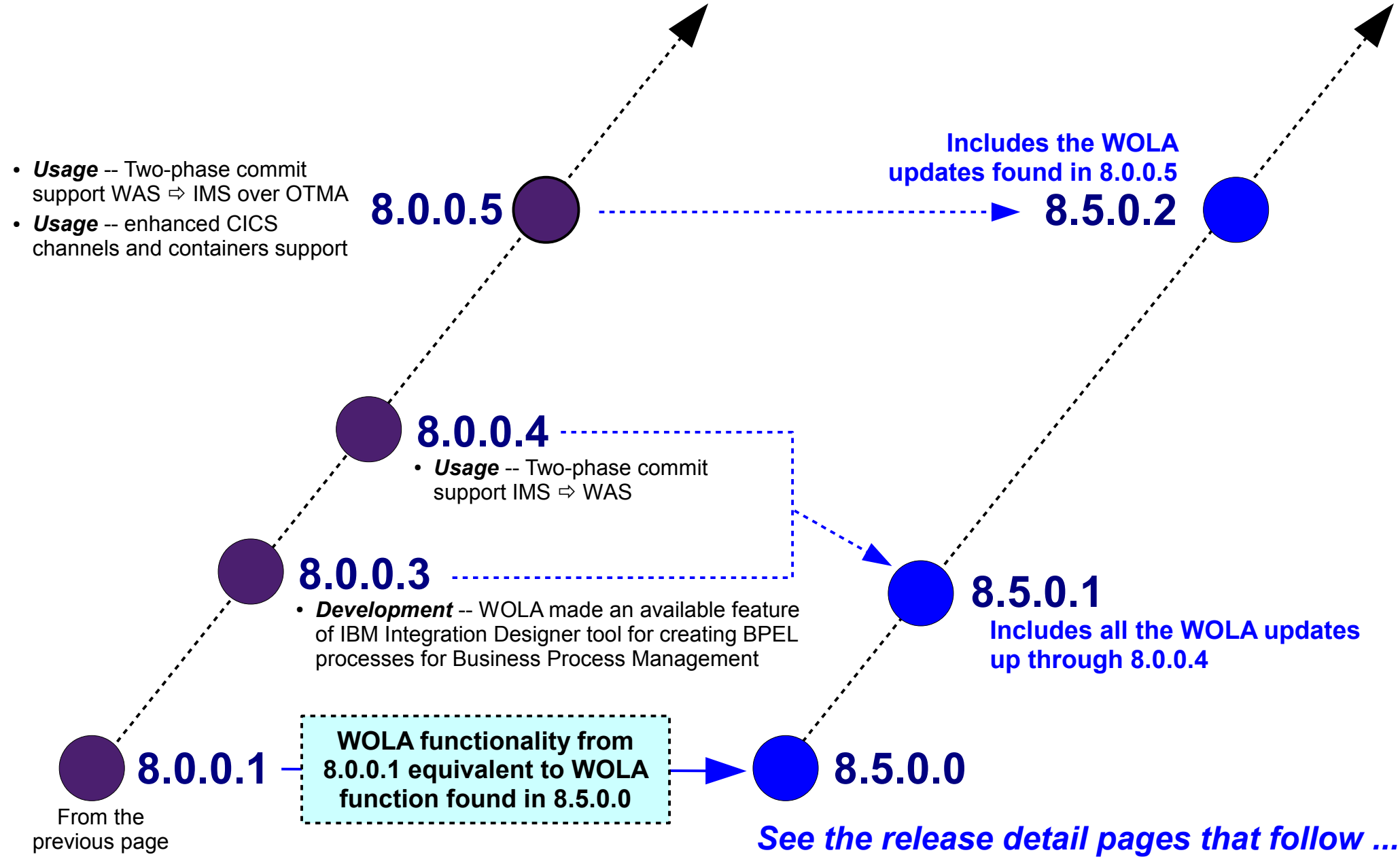
7.0.0.4

Original release of the WebSphere Optimized Local Adapters function

See the release detail pages that follow ...

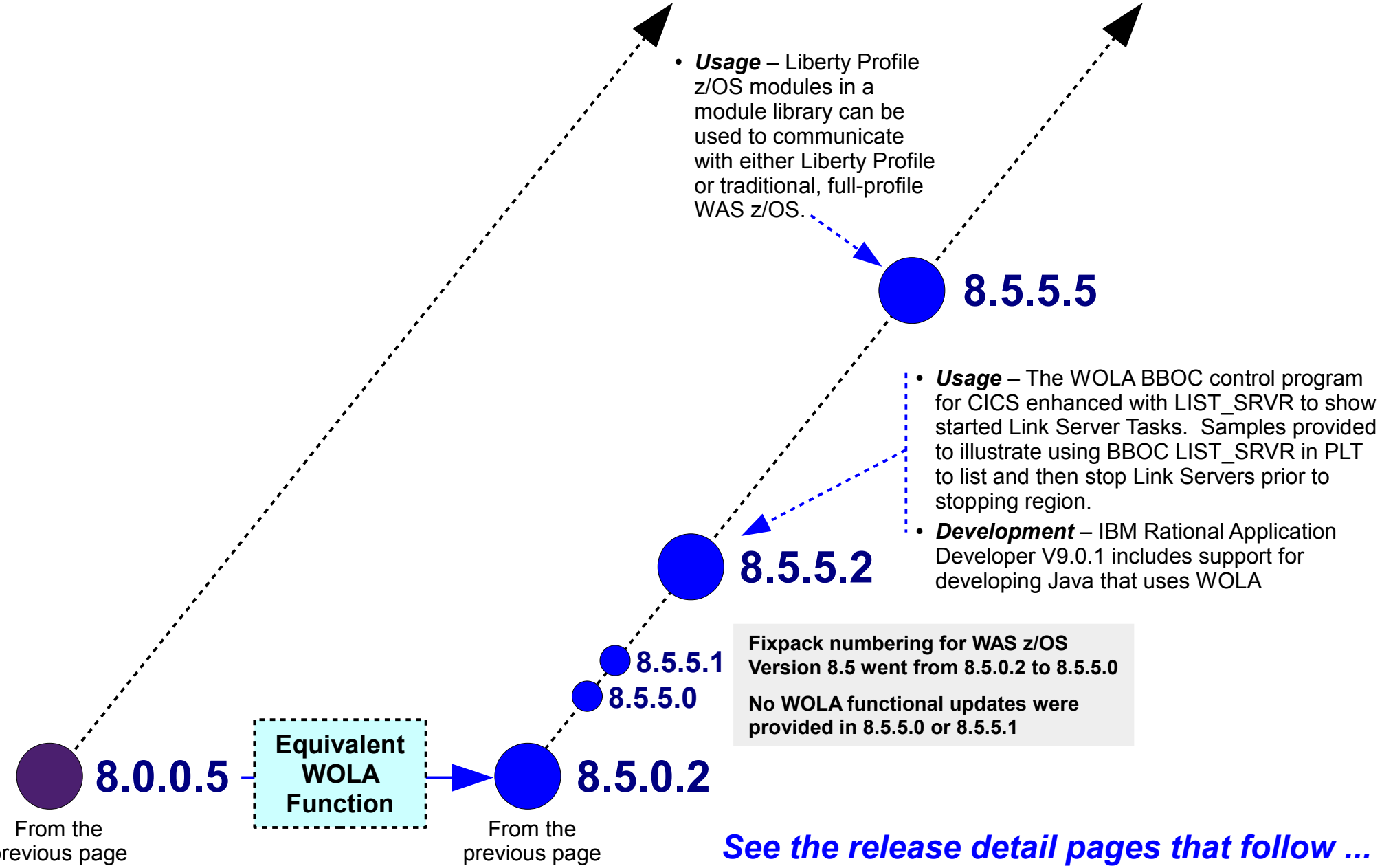
WP101490 at `ibm.com/support/techdocs`
Version Date: *Sep 1, 2015*

History of Functional Updates



WP101490 at ibm.com/support/techdocs
Version Date: *Sep 1, 2015*

History of Functional Updates



See the release detail pages that follow ...

WP101490 at ibm.com/support/techdocs
Version Date: *Sep 1, 2015*

Original 7.0.0.4 Release

- **Made available in the 7.0.0.4 release of the WAS z/OS product**
- **Required running of `olaInstall.sh` to integrate WOLA function into WAS node**
  - *Starting with WAS z/OS V8.0.0.0 the function is integrated into the nodes by default. `olaInstall.sh` is no longer needed.*
- **Initial support included Batch, USS, ALCS and CICS**
  - *Release 7.0.0.12 added IMS support to this list*
  - *Release 7.0.0.12 added two-phase commit support from WAS into CICS TS 4.1*
- **Language support included COBOL, C/C++, PL/I and High Level Assembler**
  - *Release 8.0.0.1 added support for calls coming from 64-bit external address spaces running C/C++ or Assembler*

Resources

IBM Information Center

Search on string `cdat_ola` for starting article on the subject of OLA.

Or click here to go to that page.

IBM Techdocs

`http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101490`

Or click here to go to that page.

IBM Redbooks

`http://www.redbooks.ibm.com/redpapers/pdfs/redp4550.pdf`

Or click here to go to that page.

IBM DeveloperWorks

`http://www.ibm.com/developerworks/websphere/techjournal/1102_mulvey/1102_mulvey.html?ca=drs-`

Or click here to go to that page.

YouTube®

Search on `WASOLA1` or the string `ATSDEMOS WOLA` to find the WOLA-related videos

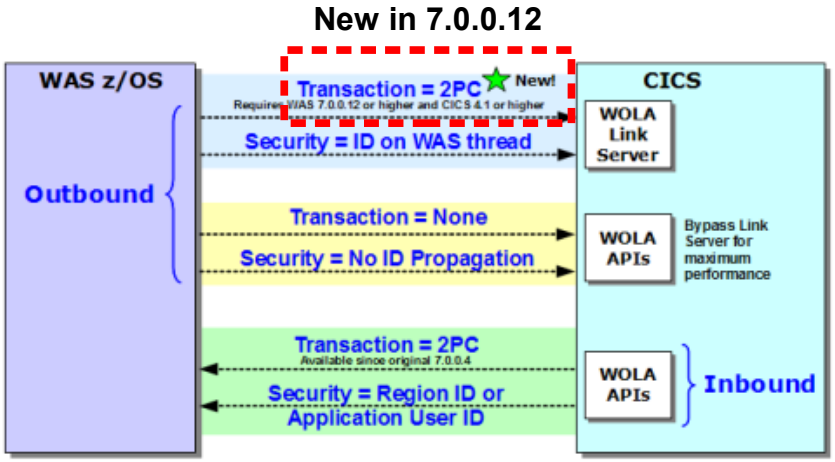
WebSphere Application Server z/OS Optimized Local Adapter
7.0.0.12 Release

Functional Updates:

- **Support for IMS (Batch Controller, ESAF or OTMA)**
- **Support for two-phase commit from WAS into CICS TS 4.1**

CICS Support Summary

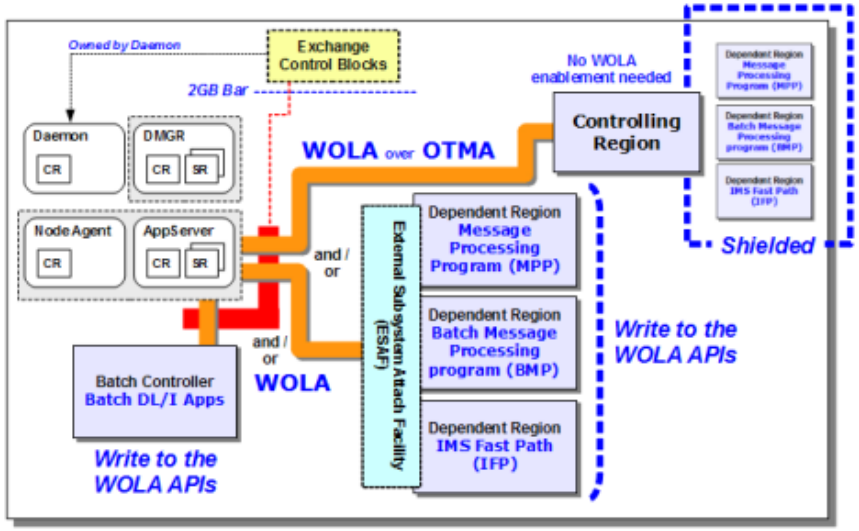
From the WP101490 Techdoc PDF titled, "Planning Guide"

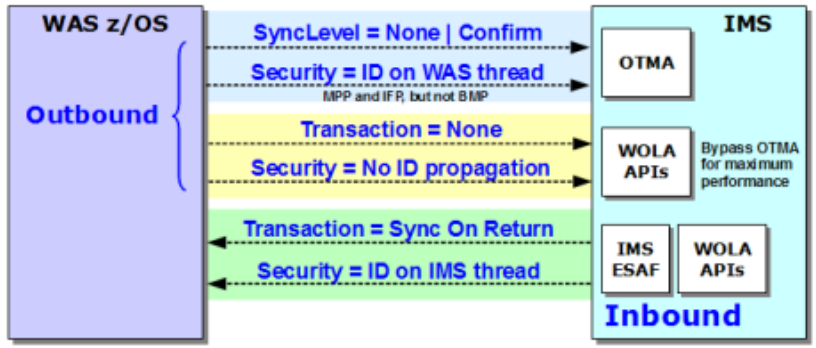


Note: the initial restriction of "synch on return" for outbound calls from WAS into CICS was due to a limitation of the Task Related User Exit (TRUE). Enabling propagation of transaction from WAS into CICS with two phase commit required a coordinated update of both WOLA and the TRUE structure of CICS. Hence the requirement of WAS z/OS 7.0.0.12 at a minimum and CICS TS 4.1 at a minimum.

IMS Support Summary

From the WP101490 Techdoc PDF titled, "Planning Guide"

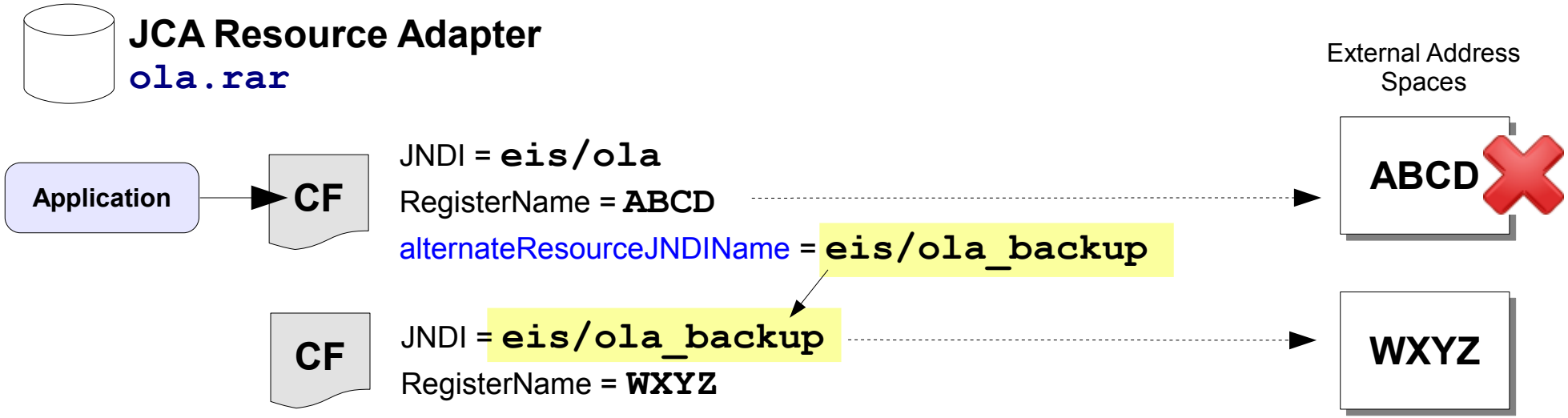




WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.0 Release

Functional Updates:

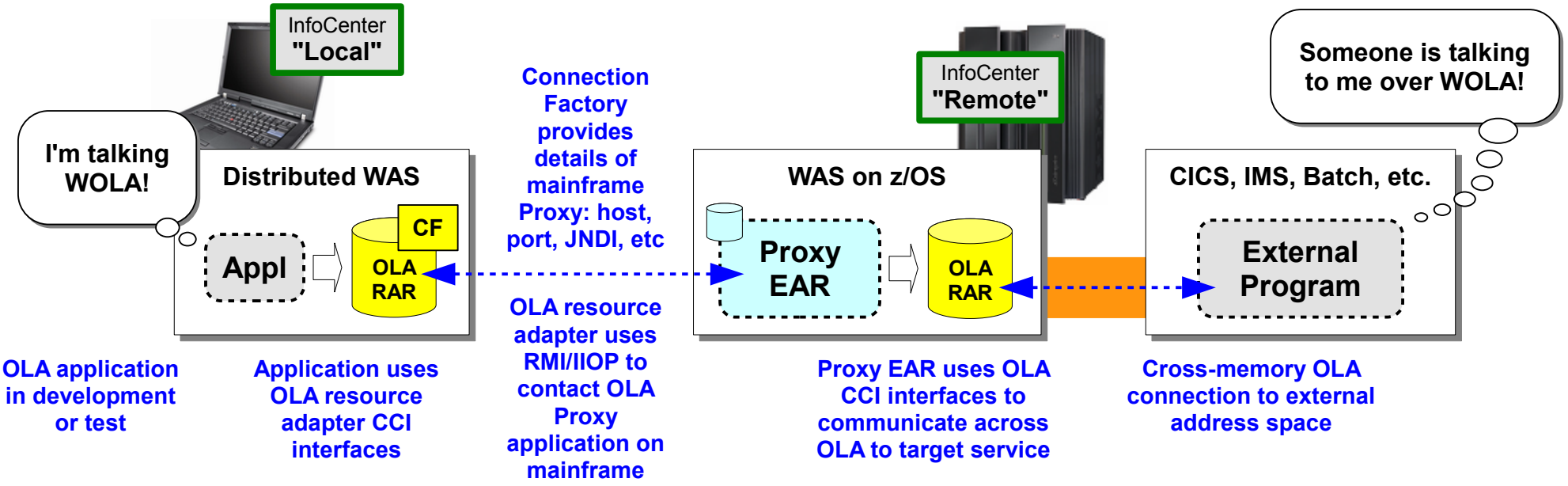
- **Integration script `olaInstall.sh` no longer needed to enable function in a node**
  New script `copyZOS.sh` is what copies WOLA modules to pre-allocated load library. The samples are now located in the directory `/util/zos/OLASamples` under the node's install root. See InfoCenter article `tdat_enableconnector` for more.
- **Support for IMS large multi-segment messages (> 32K) added**
  See the InfoCenter article `cdat_callexisttrans` for more details on this new support.
- **Support for inbound transaction classification separate from IIOP, and identification in SMF 120.9 as OLA inbound call. See:**
  "Using WLM with optimized local adapters" ... `tdat_olawlm`
  "SMF Subtype 9: Request Activity record" ... `rtrb_SMFsubtype9`
- **Availability -- ability to fail over to alternate JNDI for outbound calls and then fail back upon recovery of the original external address space**
  See illustration below and see the InfoCenter article `tdat_enablehaola` for description of the failover/failback mechanism.



WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.1 / 8.5.0.0 Release, Part 1a

Development Mode Support - "Outbound from WAS to External"

Developers creating Java applications intended to call outbound from WAS z/OS over WOLA do not always have to a WAS z/OS server to test with. This new function provides a way to test the Java application on their development workstations and have the call forwarded to a real WAS z/OS server where function testing may take place against backend external address space:



Key is the configuration of the connection factory on the development box and the installation of the Proxy EJB on z/OS. It then appears seamless to both sides.

InfoCenter Articles:

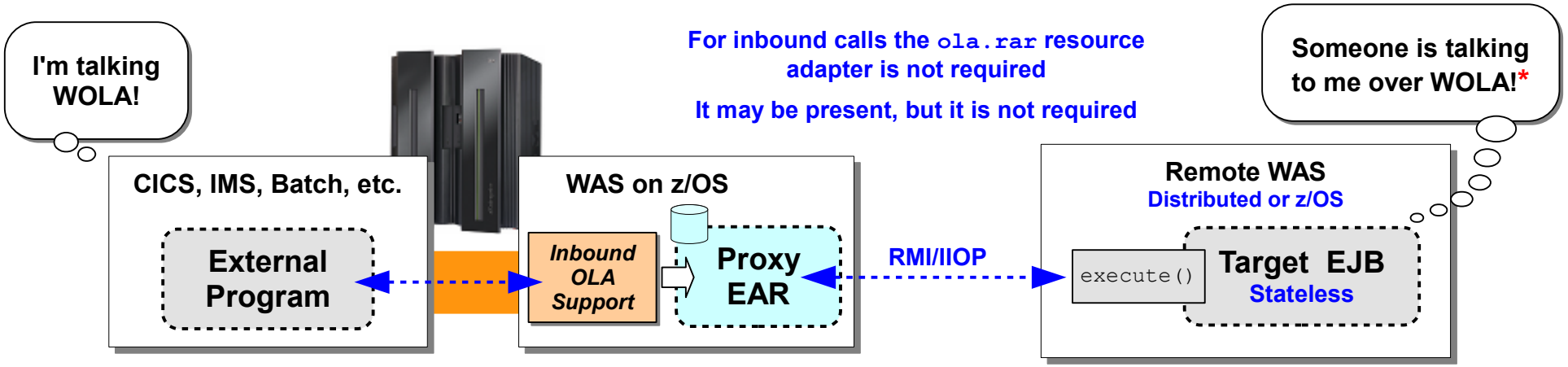
- **Overview:** `cdat_devmode_overview`
- **Configuring the "local" development system:** `tdat_develop_config_localmode`
- **Configuring the "remote" z/OS system to accept the calls:** `tdat_develop_config_remotemode`

WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.1 / 8.5.0.0 Release, Part 1b

Development Mode Support - "Inbound to WAS from External"

This is the reverse of the "Outbound" model ... suppose you wish to test some external program (CICS, batch, etc.) calling an EJB in WAS z/OS, but you wish to test the target EJB on some other server or platform. The Proxy support again comes into play:

* Actually, the target EJB sees the request as a standard RMI/IIOP request, just as it would if it was deployed on WAS z/OS with WOLA.



External program uses either BBOA1INV or BBOA1SRQ APIs with request type "2" to signal this is going to be a remote target EJB

The supplied ola_proxy.ear file contains the RemoteEJBProxy application

Requires a name space binding so RemoteEJBProxy can look up and find the target EJB's JNDI name

The target EJB has the same requirements as if it was deployed local on WAS z/OS -- stateless EJB, implement execute() method and use supplied OLA class files for the home and remote interfaces

InfoCenter Articles:

- **Remote EJB configuration and usage:** cdat_ola_remotequest
- **APIs (for information on BBOA1INV and BBOA1SRQ):** cdat_olaapis
- **Namespace federation:** cnam_federation

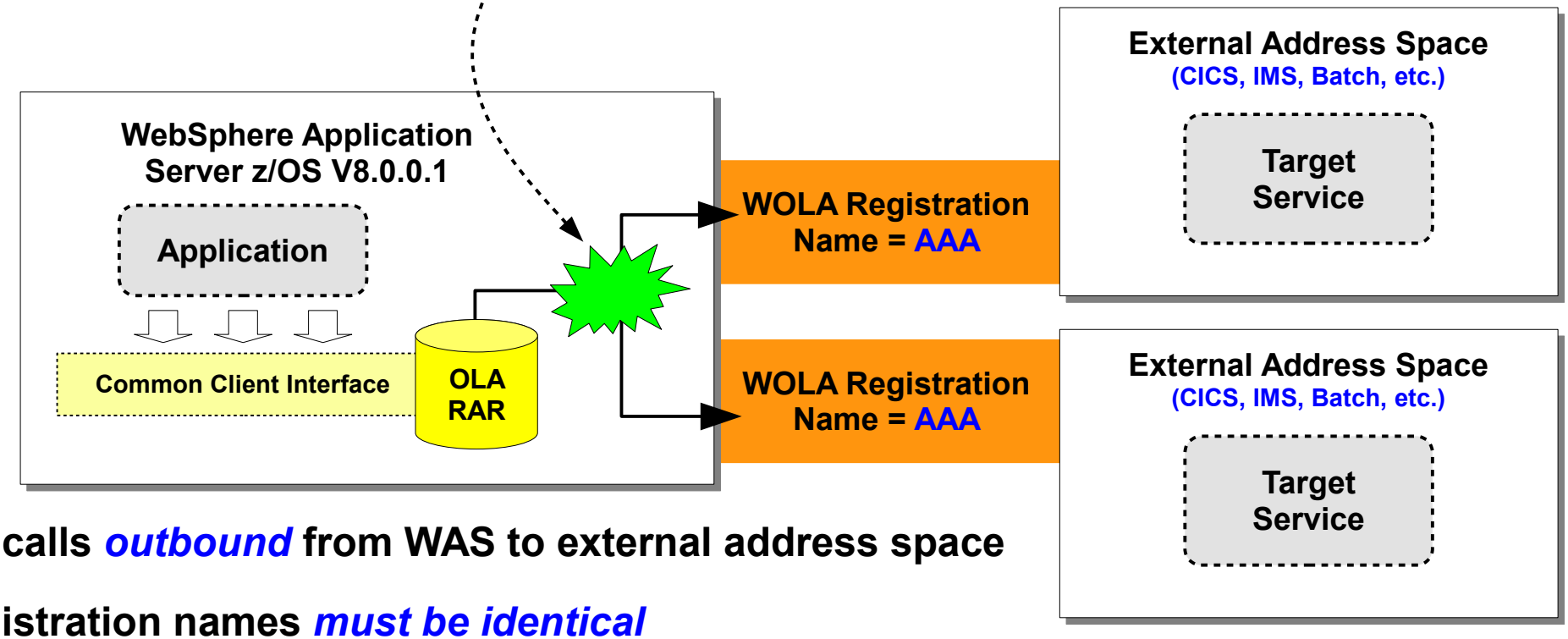
WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.1 / 8.5.0.0 Release, Part 2

Work Distribution Enhancement

Environment Variable

`ola_locate_service_search_algorithm`

1	The last external address space to register in gets work
2	Round-robin across like-named registrations

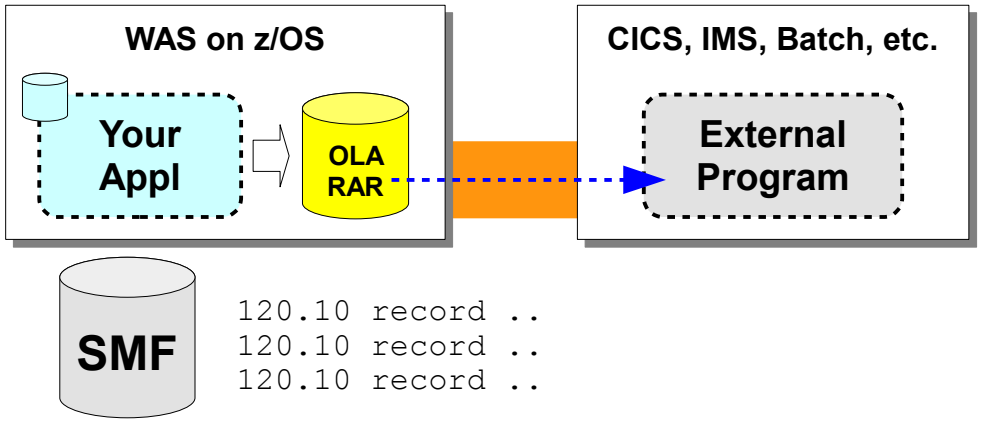


For calls *outbound* from WAS to external address space

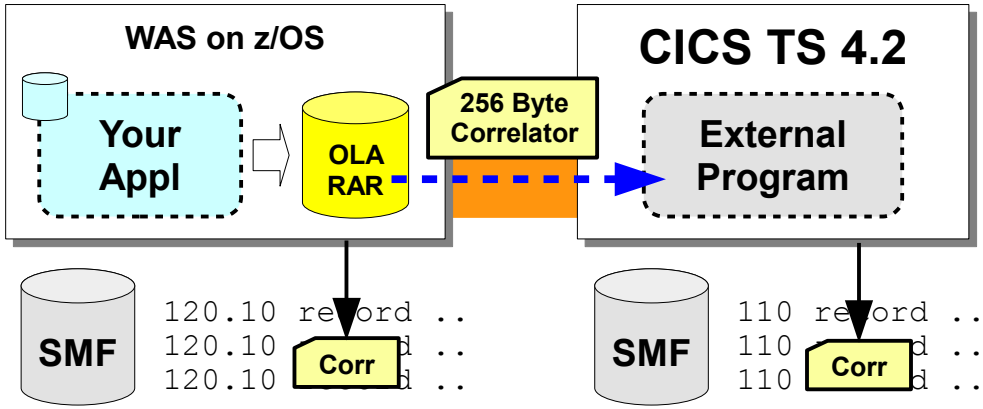
Registration names *must be identical*

Targeted service must be present in address spaces participating in the work distribution

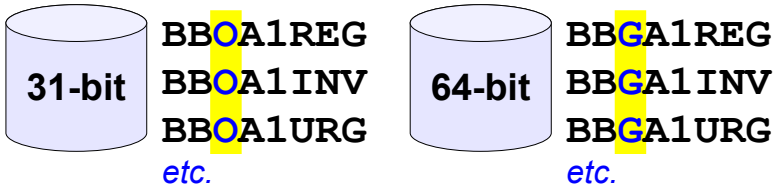
WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.1 / 8.5.0.0 Release, Part 3
New SMF 120.10 Record, CICS Correlators and 64-bit APIs



- Similar to WAS z/OS 120.9 records
- 120.9 records inbound calls, the new 120.10 is used to record *outbound* calls
- Good information about content and performance of outbound calls
- InfoCenter: `rtrb_SMFsubtype10`



- Part of the SMF 120.10 record function
- 256 bytes of specific information about the outbound request
- With CICS 4.2 the correlator ends up in the CICS 110 records as well
- InfoCenter: `rtrb_SMFsubtype10`

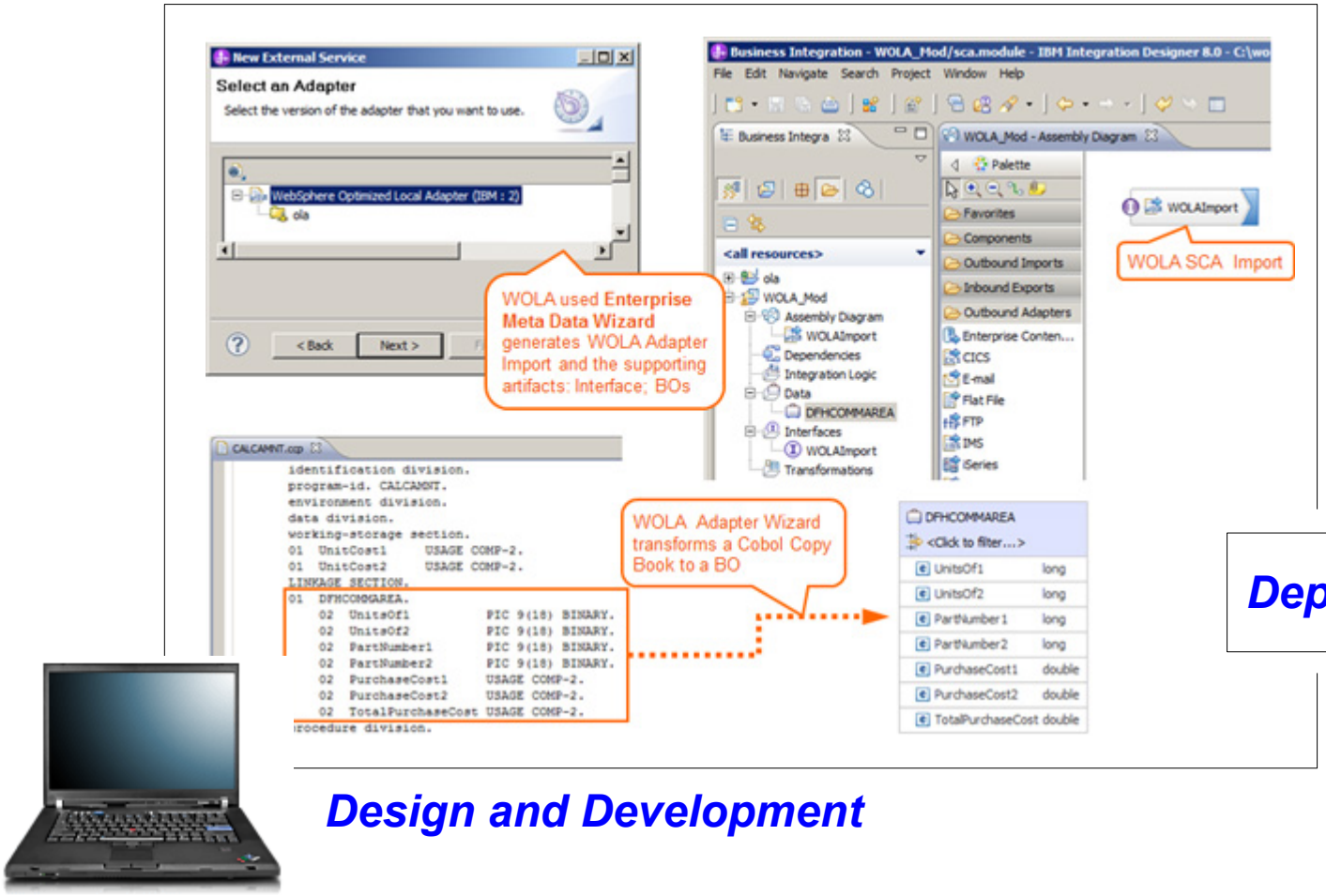


- Callable by 64-bit address spaces running C or Assembler (Batch, USS)
- API pointers 64 bits
- InfoCenter: `cdat_olaapis`

WP101490 at ibm.com/support/techdocs
Version Date: *Sep 1, 2015*

WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.3 / 8.5.0.1 Release

WOLA support included in IBM Integration Designer for BPEL Processes



Design and Development

developerWorks Article

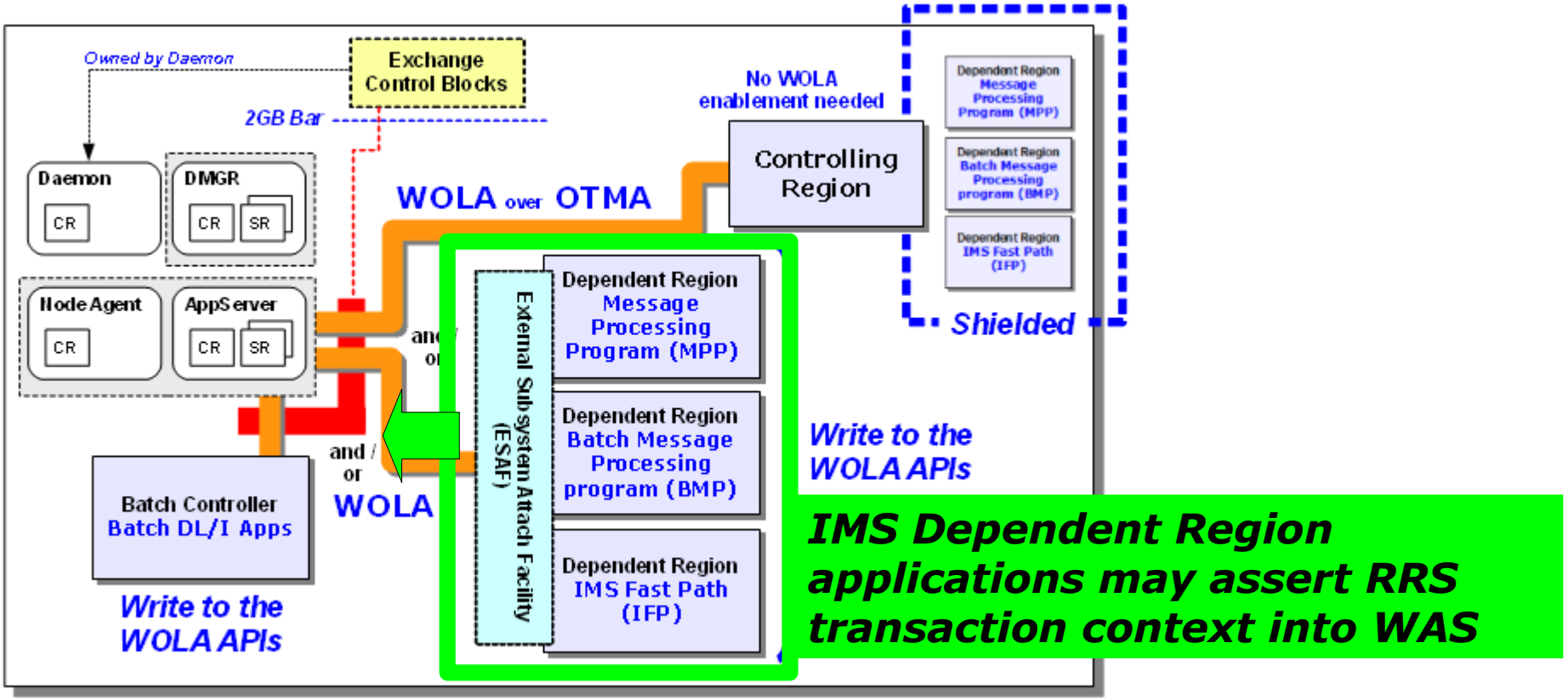
http://www.ibm.com/developerworks/bpm/bpmjournal/1206_pacholski/1206_pacholski.html

InfoCenter

http://pic.dhe.ibm.com/infocenter/dmndhelp/v8r0mx/topic/com.ibm.wbpm.wid.integ.doc/topics/wolaoverview.html

8.0.0.4 / 8.5.0.1 Release

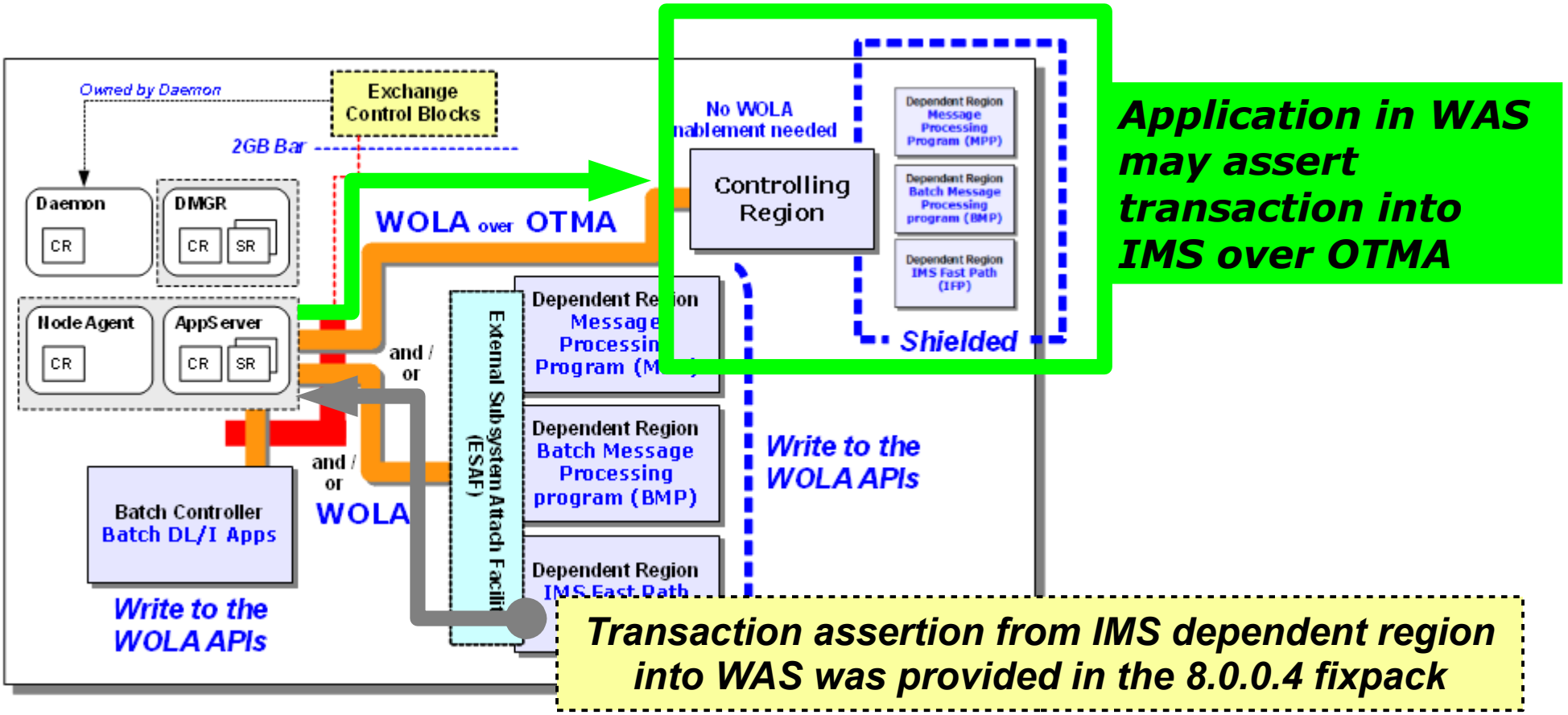
RRS transaction context assertion from IMS into WAS over WOLA



- Applications in IMS use set the "transaction supported" flag on register API
- Target WAS environment has `ola_rrs_context_propagate = 1` environment variable set and enabled
- IMS Control Region needs to be running with `RRS=Y`

WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.5 / 8.5.0.2 Release, Part 1

RRS transaction context assertion from WAS into IMS over WOLA / OTMA



- IMS Control Region needs to be running with `RRS=Y`
- Source WAS environment has `ola_rrs_context_propagate_otma = 1` environment variable set and enabled

WebSphere Application Server z/OS Optimized Local Adapter
8.0.0.5 / 8.5.0.2 Release, Part 2

Enhanced support for CICS Channels and Containers

Before ...

CICS channels and containers support was limited to a single fixed-name channel for both request and response, and a single container of type BIT or CHAR.

With 8.0.0.5 / 8.5.0.2 or later ...

- **Send and receive *one or more* containers from target CICS program**
- **Channel name is set by you using `setLinkTaskChanID()` method**
- **Channel type is set by you using `setLinkTaskChanType()` method**
- **The names of the individual request containers are set by adding data to the MappedRecord, using the `put()` method.**
- **The keys of the MappedRecord correspond to the CICS container names, and the corresponding value will be used to fill the container in CICS.**
- **The response container names will be extracted from the channel after the CICS request is finished, and populated into a new MappedRecord, which is returned to the client.**

See InfoCenter `tdat_enableconnector`, `cdat_olaapis` and `rdat_cics`

8.5.5.2 Release, Part 1

Enhanced BBOC/BBOACNTL with LIST_SRVR

START_TRUE
STOP_TRUE
REGISTER
UNREGISTER
START_SRVR
STOP_SRVR
LIST_SRVR

These operations are original to BBOC and BBOACNTL from the beginning

See InfoCenter: rdat_cics

LIST_SRVR is new … it provides a way to list the active WOLA Link Servers in a region, either manually *or programmatically*

The programmatic use for LIST_SRVR allows a program to list then systematically shut down all active Link Servers before bringing down the CICS region. Refer to sample BBOACPLS below

Operation	*Abbrev*	*Parameters*
LIST_SRVR	LST	RGN=<*name*> LTSQ=<*tsqname*> TRC=0/1/2 TDQ=<*tdqname*>

None are required. LIST_SRVR with no parameters results in *all* active Link Server tasks being listed or returned

Additional samples related to CICS region start and stop routines

BBOACPLT — **Assembler sample source for CICS PLT initialization routine that shows how to enable the OLA TRUE during CICS startup**

BBOACPL2 — **Assembler sample source for CICS PLT initialization routine that shows how to get OLA INITPARMS from CICS startup parms and issue BBOC STRT_SRVR during CICS startup**

BBOACPL3 — **Assembler sample source for CICS PLT initialization routine that shows how to pass multiple BBOC commands to BBOACNTL during CICS startup**

BBOACPLS — **Assembler sample source for CICS PLT shutdown routine that shows how to retrieve a list of running WOLA Link Servers during CICS shutdown and how to stop them**

See InfoCenter: cdat_olasamples

WebSphere Application Server z/OS Optimized Local Adapter 8.5.5.2 Release, Part 2

Integrated WOLA Support in IBM Rational Application Developer 9.0.1

ibm.com/support/docview.wss?uid=swg27038836

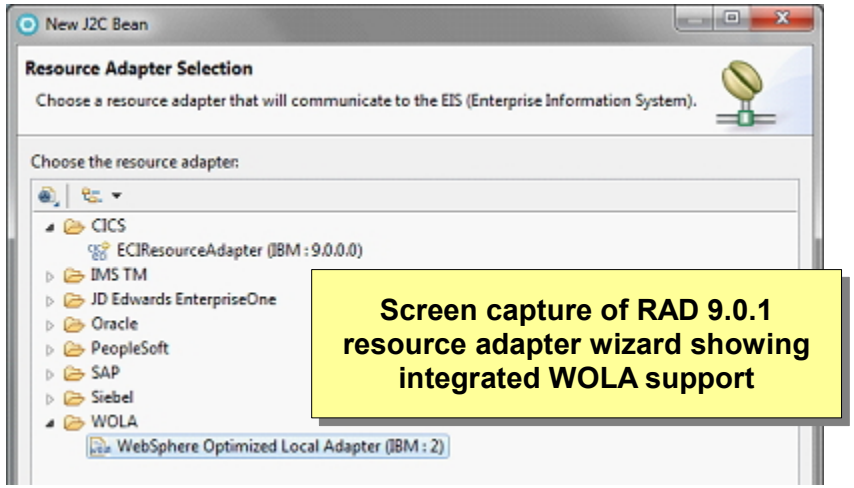
WebSphere Optimized Local Adapters support

Added support for using the WebSphere Optimized Local Adapters (WOLA). This new feature, when combined with existing WebSphere Adapters capabilities and J2C tooling, provides a simple way to integrate components on z/OS systems running in batch address spaces, Customer Information Control System (CICS) environments, and Information Management System (IMS) environments with those supported using WebSphere Adapters today (SAP, Oracle, PeopleSoft, Seibel, and so on). The resource adapter is a new installable feature, and must be installed from Installation Manager to enable the new function.

Note: This new RAD 9.0.1 WOLA support applies to WAS 8.5.0.+ levels, which is the level embedded with V9 RAD. The RAD support can be used on prior levels of WAS z/OS, but users will need to bring in the associated level's `ola_apis.jar` and `ola.rar` resource adapter and place it on their RAD build path.

developerWorks article showing end-to-end use case

http://www.ibm.com/developerworks/websphere/techjournal/1312_mulvey/1312_mulvey.html

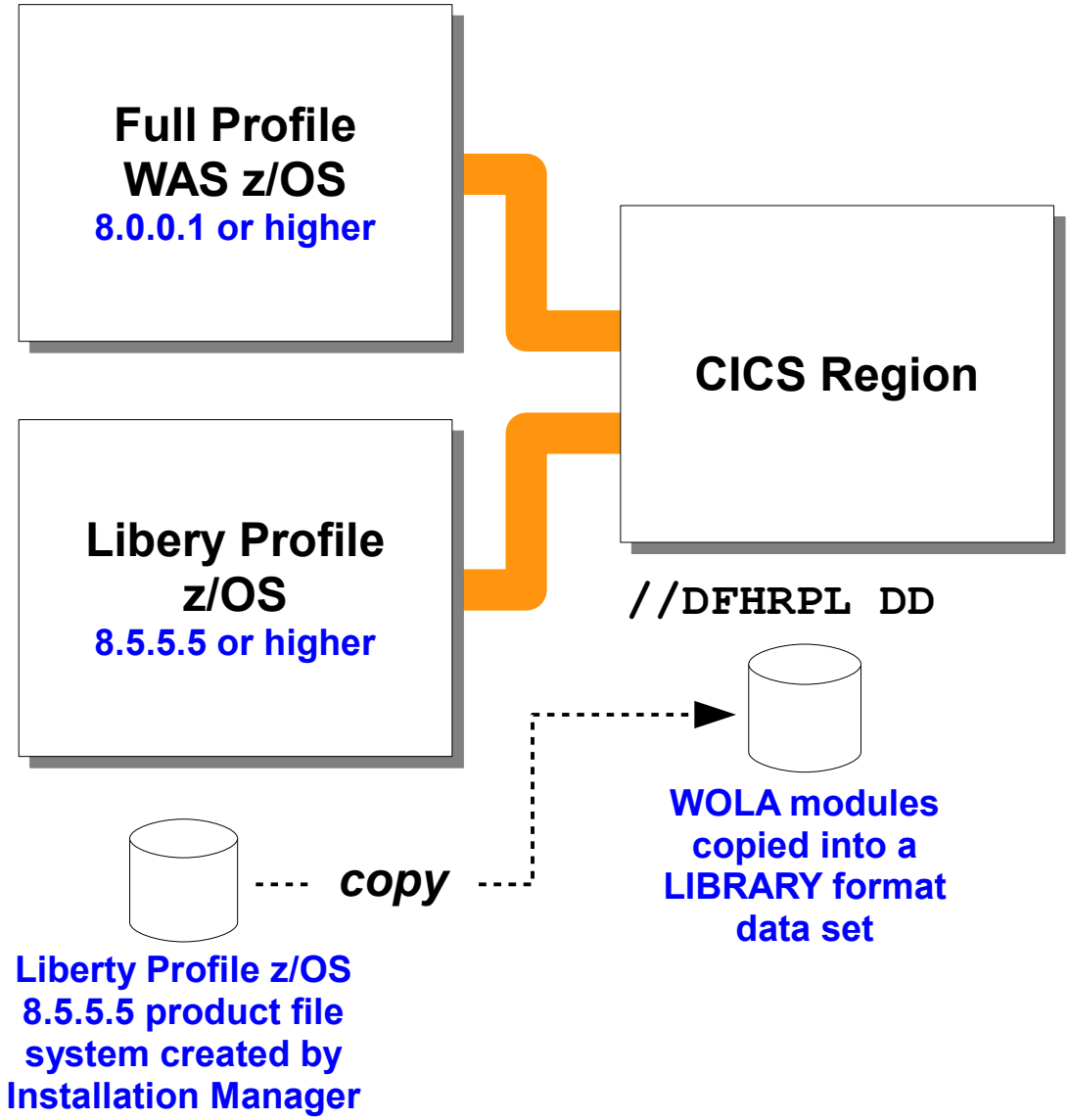


Screen capture of RAD 9.0.1 resource adapter wizard showing integrated WOLA support

> "This article presents one such scenario, in which a CICS application uses optimized local adapters and WebSphere Application Server for z/OS to communicate with applications running on SAP servers."

WebSphere Application Server z/OS Optimized Local Adapter
8.5.5.5 Release

Concurrent connectivity, full-profile WAS z/OS and Liberty Profile z/OS



Key Points:

- Support for WOLA and Liberty Profile z/OS came in with 8.5.5.2
- At that time, the WOLA modules supplied with Liberty Profile z/OS could only communicate with Liberty Profile z/OS, not the full-profile WAS z/OS servers
- With 8.5.5.5 the WOLA modules supplied with Liberty Profile z/OS can be used to communicate with either Liberty Profile z/OS servers, full-profile WAS z/OS server, or both
  Full-profile WAS z/OS WOLA modules can only communicate with full-profile WAS z/OS server, and not with Liberty Profile z/OS servers. For dual or concurrent access, use the Liberty Profile z/OS WOLA modules
- This allows, for example, a CICS region to host concurrent WOLA registrations into both with a single module library concatenated to DFHRPL.